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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

OFFICE OF MYCOLOGY AND DISEASE SURVEY

Vol. XV July 15, 1931 Number 8

SOME FUNGI FROM THE GRAND MESA NATIONAL FOREST, COLORADO*

By Ross W. Davidson, Junior Mycologist,
Division of Mycology and Disease Survey

A survey of the fungi of the Grand Mesa National Forest in Western Colorado with special reference to economic species was made from June 12 to July 20, 1930. Most of this time was spent on Grand Mesa which is a large flat topped mountain of 10,500 feet elevation. Here moisture from winter snows and summer showers make possible a rather rich subalpine flora. The National Forest reserve covers not only Grand Mesa proper, but extends across lower mesas to the east.

The elevation at Mesa Lakes is approximately 9,800 feet; the region below Mesa Lakes 7000 to 8000 feet; Alexander Lakes, 9,800 feet; and the Buzzard Creek region which is not on Grand Mesa is probably from 6000 to 7000 feet.

The predominating flora of the higher altitudes consists of spruce and fir. Below the rim of the mountain the aspens become numerous and still farther down on the mountain sides, scrub oak and Amelanchier become dominant.

This report contains most of the parasitic fungi collected on this trip with the exception of a number of very interesting Sclerotinias which are being held for further study. There are also included a few interesting but non-parasitic fungi.

The collector wishes to express his appreciation to Mr. Ray Peck, Forest Supervisor at Grand Junction, Colorado, for his helpful suggestions and interest in the work, and also to Mr. Ivar Tidestrom of the Bureau of Plant Industry, who identified many of the hosts.

*This work was undertaken in cooperation with the Division of Forest Pathology.

1. Plasmopara geranii (Peck) Berl. & De Toni on Geranium sp. July 8, near Mesa Lakes.

PYRENOMYCETES

2. Sphaerotheca humuli (D. C.) Burr. on Pedicularis bracteosa and on Ranunculus alismaefolius near Mesa Lakes, July 15.

This is the first report of this fungus on P. bracteosa and there seems to be no previous record of its occurrence on any species of Ranunculus.

The specimens were collected only a short distance from each other and microscopically they seem to be identical.

3. Eutypella cerviculata (Fr.) Sacc. on Alnus tenuifolia, June 24, in the Buzzard Creek region.

4. Diatrypella aspera (Fr.) Nitschke on Quercus sp. (scrub oak), July 14, several miles below Mesa Lakes.

5. Diatrypella verrucaeformis (Ehr.) Nitschke on Alnus tenuifolia, July 16, near Alexander Lakes.

6. Valsa boreella Karst. on Salix sp. Mesa Lakes, June 18, and four and one-half miles below Mesa Lakes, July 9 and July 12. Ascospores 8 - 10μ long by 1.5 - 2μ thick.

7. Valsa salicina (Pers.) Fr. On Salix sp. Mesa Lakes, June 14 and 18. Ascospores 15 - 18 x 2.5 - 3μ.

There seems to be a constant difference in the size of spores in these two species. In almost every specimen the perfect stages were associated with a Cytospora. The spores of the Cytospora accompanying V. boreella were consistently smaller than those with V. salicina. Frequently only one to several perithecia occur in each stroma with the pycnidial stage.

Many of the willows around the lakes in the vicinity of the Mesa Lakes Resort seem to be badly infested with fungi, especially the numerous dead and dying branches. Whether the poor condition of the willows is due primarily to parasitic fungi or to other causes was not definitely determined. The Cytosporas seem to be parasitic and often occur on the tender twigs. The Dothichiza sp. (see #20) is also parasitic on the green tender shoots.

8. Valsa nivea (Hoffm.) Fr. on Populus tremuloides.

This fungus occurs in abundance and is widespread in the aspen groves on Grand Mesa. Large, yellowish, watery, cankered areas may be seen on many of the trees.

Numerous large aspens along the trail to Cottonwood Lakes showed old scars extending for many feet along their trunks. Apparently they had finally resisted or outgrown the fungus.

Both the perithecia and pycnia were found scattered over the cankered areas.

9. Valsella nigro-annulata Fckl. on Salix sp., Mesa Lakes, June 18.

10. Gnomoniella tubiformis (Tode) Sacc. on overwintered leaves of Alnus tenuifolia. Buzzard Creek region, June 24. Several miles below Mesa Lakes, July 12.

11. Hypoxylon morsei B. & C. on Salix sp., July 9, several miles below Mesa Lakes.

12. Hypoxylon diathrauston Rehm on Abies lasiocarpa, Mesa Lake, June 13 and July 14, on top of Grand Mesa, July 2. (Det. by C. L. Shear)

13. Mycosphaerella tassiana (De Not.) Johans. on green leaves of Carex geyeri, Mesa Lakes, July 1.

14. Venturia chlorospora (Ces.) Karst. on overwintered leaves of Salix sp. near Mesa Lakes, June 18.

15. Herpotrichia nigra Hartig on Abies lasiocarpa near Mesa Lakes, July 15.

16. Herpotrichia quinqueseptata Weir on Picea engelmanni near Mesa Lakes, July 15.

17. Herpotrichia sp. on Juniperus sp. near Mesa Lakes, July 1.

All of these Herpotrichias are leaf-matting fungi which do some damage to small trees. In general appearances, there are no differences between these fungi and it is quite likely that the species are not confined to the hosts on which they are here mentioned. Most of the specimens observed in the field were not in fruiting condition. They seem to be quite widespread although not abundant on Grand Mesa.

18. Cryptospora suffusa (Fr.) Tul. on Alnus tenuifolia; three miles below Mesa Lakes and also near Alexander Lakes, July 16.

Perithecia of the material collected were all too old to show asci but their arrangement is typical of this species. A few spores were present.

19. Cucurbitaria ribis Niessl. on twigs of Ribes wolfii, Mesa Lakes, June 13, and just below the rim at Lands End, July 5.

20. Keisslerina sp. on Salix sp., June 14 at Mesa Lakes, June 17 near Alexander Lakes, June 18 near Mesa Lakes, June 25 on top of Grand Mesa. On Populus tremuloides near Mesa Lakes, June 18. (Det. C. L. Shear)

Dr. C. L. Shear is studying this interesting fungus and believes it to be a species of Keisslerina. A Dothichiza sp. is closely associated with it and is probably the pycnidial form. A specimen in the herbarium labeled "Myxosporium cytosporium Sacc. (Co-type)" from "Cold Springs, Wyoming" is the same fungus as this Dothichiza collected at Grand Mesa but is in a very young condition.

Most of the specimens collected indicate that the imperfect stage of this fungus is definitely parasitic. It occurs on the tips of green living twigs and the areas of infection are thickly covered with pycnidia or perithecia.

The specimen of twigs from the top of Grand Mesa shows that they were evidently killed late the previous fall, for immature perithecia are present on some of the unopened buds.

The specimen of Populus tremuloides contained only the perfect stage which was on older woody twigs. Nevertheless the fungus had invaded living tissue to some extent. The host seemed to have resisted further invasion the following year.

As has been stated, (see note under Valsa salicina (#7)) the willows in the vicinity of Mesa Lakes are infested with many fungi, this, however, is not the case with the small shrubby willows growing on top of the Mesa at an elevation of 10,500 feet. Few dead twigs or branches occurred there and the only parasitic fungus found was this Keisslerina sp.

21. Lophodermium caricinum (Rob.) Duby on stems of Carex geyeri, Mesa Lakes, July 1.

22. Lophodermium juniperinum (Fr.) De Not. on Juniperus (communis)? near Cottonwood Lakes, July 11.

23. ?Lophodermium nervisequum (DC. ex Fr.) Rehm. on Abies lasiocarpa and Picea engelmanni. A number of specimens of this fungus were obtained but none were in good fruiting condition.

This type of fungus is quite common on Abies lasiocarpa and a few trees were noticed which appeared considerably yellowed when viewed from a distance.

24. Naevia seriata (Lib.) Rehm var. comedens Rehm on Carex sp. near Alexander Lakes, June 17. (Determined by E. K. Cash and R. W. Davidson)

This little organism occurs on deadened areas of green leaves. It looks very much like a pyrenomycete but freehand sections show clearly that it belongs to the Discomycetes.

25. Tryblidiopis pinastri (Pers.) Karst. on Picea engelmanni on top of Grand Mesa, July 2.

This little black discomycete is quite common throughout this region on dead lower branches of spruce. None of the specimens collected have been in a mature condition but after being dampened and placed in a refrigerator for a week to ten days, a few mature asci were found.

The imperfect stage, Micropera pinastri (Moug.) Sacc., is also present on specimens containing the ascus stage but spores are very narrow (20-30 x 1μ).

26. Fabraea maculata (Lev.) Atk. (Entomosporium maculatum) on Amelanchier alnifolia. Four miles below Mesa Lakes, July 12.

This leaf disease fungus was abundant where the host occurs. Both stages were collected.

27. Dasyscypha arida (Phill.) Sacc. on Picea engelmanni and Abies lasiocarpa near Mesa Lakes, June 13.

This bright colored discomycete is very abundant wherever the hosts occur on Grand Mesa. It is rather conspicuous while the snow is melting in the early spring and after showers later in the summer. It is considered to be non-parasitic.

28. Taphrina caerulescens (D. & M.) Tul. on Quercus sp. Several miles below Mesa Lakes, July 10. Quite common throughout this region.

BASIDIOMYCETES

29. Aecidium conspicuum Arth. on Helenium hookerii several miles below Alexander Lakes, July 16.

30. Calyptospora columnaris (Alb. & Schw.) Kühn on Vaccinium sp. near Mesa Lakes, June 16 and July 8.

The alternate host for this rust is supposed to be Abies lasiocarpa but it was not found on this host at Grand Mesa.

31. Gymnosporangium nelsoni Arth. on Juniperus sp. and Amelanchier alnifolia below Mesa Lakes, July 10.

The pycnia are exceedingly abundant on leaves of Amelanchier during the early part of the summer.

32. Melampsora confluens (Pers.) H. S. Jackson on Salix sp. Several miles below Mesa Lakes, July 10.

33. Melampsorella elatina (A. & S.) Arth. on Abies lasiocarpa, Mesa Lakes, July 15.

This "witches broom" rust is very similar to Peridermium coloradense. It is not abundant on Grand Mesa.

34. Peridermium coloradense (Diet.) Arth. & Kern on Picea engelmanni. Near Cottonwood Lakes, July 11; Mesa Lakes, July 15; Alexander Lakes, July 16.

This is probably the most conspicuous fungus of this region. It occurs on branches or main trunks, distorting them and forming "witches broom" growth. The percentage of trees infected is not large, however.

35. Phragmidium ivesiae Syd. on Potentilla sp., Mesa Lakes, June 16.

36. Phragmidium sp. on Rosa sp., several miles below Mesa Lakes, June 10.

37. Puccinia adoxae Hedw. on Adoxa moschatellina four miles below Alexander Lakes, July 16.

38. Puccinia absinthii (Hedw.) DC. on Artemisia tridentata, below Mesa Lakes, July 10.

39. Puccinia apocrypta Ell. & Tracy on Hydrophyllum fendleri, below Alexander Lakes, July 16.

40. Puccinia arnicalis Peck. on Arnica cordifolia, Mesa Lakes, July 15.

41. Puccinia clematidis (DC.) Lagh. on Aconitum sp., below Alexander Lakes, July 16, and on Aquilegia caerulea, July 24, in this same locality.

42. Puccinia grossulariae (Schum.) Lagh. on Ribes sp. (gooseberry), Buzzard Creek region, June 24.

43. Puccinia hieracii (Schum.) Mart. on Taraxacum sp., Mesa Lakes, July 15.

44. Puccinia holboellii Rostr. on Arabis sp., below Mesa Lakes, July 10.

45. Puccinia pimpinellae (Strs.) Mart. on Osmorhiza occidentalis, near Mesa Lakes, June 18.

46. Uromyces fabae (Pers.) DeBy. on Lathyrus sp., near Mesa Lakes, July 12.

47. Uromyces jonesii Peck on Ranunculus alismaefolius on top of Grand Mesa, July 3.

48. Uromyces porosus (Peck) Jackson on Vicia americana near Mesa Lakes, July 12 and July 15.

49. Uropyxis sanguinea (Peck) Arth. on Mahonia sp., below Mesa Lakes, July 10.

50. Doassansia epilobii Farl. on Epilobium sp., Mesa Lakes, July 15.

51. Entyloma ranunculi (Bon.) Schröt. on Ranunculus bongardi, Mesa Lakes, July 15.

This is the first report of this smut from Colorado and the first on this species of Ranunculus.

52. Stereum rufum Fr. on Populus tremuloides near Mesa Lakes, June 18. Abundant on dead aspen twigs. (Det. by J. A. Stevenson)

53. Fomes igniarius (L. ex Fr.) Gill. on Populus tremuloides, June 21. Along the trail to Cottonwood Lakes. (Det. by John A. Stevenson)

In the Cottonwood Lakes region and on the eastern slope of Grand Mesa, this fungus is exceptionally serious. Often trees may be seen with 15 to 20 fruiting bodies on them. It causes a very serious heart rot in many areas, rendering the trees unfit for the sawmills.

FUNGI IMPERFECTI

54. Sphaeronema pruinosum Peck on Amelanchier alnifolia, below Mesa Lakes, July 14.

55. Coniothyrium sambuci Earle on Sambucus microbotrys, June 13 and June 19 near Mesa Lakes.

Also Leptothyrium and Coniothecium sp. were present.

Twigs die back each year from this fungus.

56. Septoria circinella Sacc. & Roum. on Carex geyeri, July 1, and Carex sp., July 12. (Spores linear, 1-1.5μ thick.)

57. Septoria psilostega Ell. & Martin on Galium boreale, July 12, 1930.

Pycnidia containing spores were also present on overwintered leaves and stems.

58. Septoria symphoricarpi E. & E. on Symphoricarpos sp., July 12.

59. Leptothyrium periclymeni Desm. var. americanum E. & E. on Lonicera involucrata, June 24, Buzzard Creek region.

60. Marssonia veratri E. & E. (= Marssonina Magn.) on Veratrum californicum, July 15, near Mesa Lakes.

61. Diplocarpon earliana (E. & E.) Wolf. (Marssonia stage) on Fragaria bracteata, July 12. Several miles below Mesa Lakes.

62. Cylindrosporium heraclei (E. & E.) on Heracleum lanatum, July 12, several miles below Mesa Lakes.

63. Melanconium sp. on Salix sp., June 18, Mesa Lakes.

This is probably M. salicinum E. & E. The spores are 9-14μ in diameter.

64. Ovularia sp. on Lupinus parviflorus Nutt. near Mesa Lakes, July 12. Conidiophores 65 - 85μ long by 5.5. - 7μ thick. Conidia, 20 x 28 x 12 - 16μ.

Infection occurred from the overwintered leaves at the base of the plants. These old leaves contained perithecia-like bodies from which white tufts of conidiophores protruded. No asci or spores other than conidiospores could be found associated with these perithecia-like bodies.

65. Ramularia archangelicae Lindr. on Angelica sp., July 12, Mesa Lakes.

66. Ramularia delphinii Jaap on Delphinium berbeyi, July 16, several miles below Alexander Lakes.

This fungus has not been reported on this species of Delphinium before.

67. Ramularia filaris Fres. on Senecio serra Hook., Mesa Lakes, July 15. Conidia 20 - 35μ, sometimes 40μ x 3.5 - 4μ, slightly tapering at each end.

68. Ramularia tulasnei Sacc. on Fragaria bracteata, July 11, near Cottonwood Lakes.

69. Cercospora geranii Kell. & Sw. on Geranium(richardsoni)? July 12, below Mesa Lakes.

70. Cercosporella fraserae (E. & E.) Sacc. on Frasera speciosa, July 15, near Mesa Lakes.

71. Fusicladium depressum (B. & Br.) Sacc. on Angelica sp., July 12, near Mesa Lakes.

DISEASES CAUSED BY NEMATODES

APHELENCHUS PARIETINUS AS THE CAUSE OF SEEDLING LOSSES IN COTTON

By C. H. Arndt, South Carolina Agriculture Experiment Station and G. Steiner, Bureau of Plant Industry, U. S. Department of Agriculture.

During March and April 1931, extensive plantings of fifty varieties of cotton seed were made under the supervision of C. H. Arndt of the South Carolina Agricultural Experiment Station at Clemson College and Florence, South Carolina, to determine the relative ability of the various varieties or strains to produce stands under the low temperatures of the early portion of the growing season. The germination of the seed was very variable, but small stands of most of the varieties were secured, particularly at Florence. Later the seedlings showed the typical symptoms of damping-off. From 60 to 90 per cent of these seedlings were killed in the early stages of their development. Previous examinations of similarly diseased seedlings indicated that the lesions were not of the usual type produced by the fungi causing damping-off; although species of Corticum and Fusarium always developed when such seedlings were washed and placed on nutrient agar. Nemas were invariably found in such lesions. Several hundred seedlings, selected at random, were examined (by C. H. A. and two associates) from both of the places above noted with the following results as to the type of injury found on the seedlings: Nemas 70 to 80 per cent; Corticium (typical sore-shin)

8 to 15 per cent; Fusarium sp. 5 to 10 per cent (species determined by Dr. C. D. Sherbakoff as F. vasinfectum, F. viride, F. martii-minus, F. moniliforme), an undetermined phycomycete 1 to 3 per cent; normal plants, without lesions, not above 10 per cent.

In later plantings made in adjacent plots when temperature conditions were favorable for a more rapid growth of the seedlings there was relatively little loss from damping-off and not more than 5 per cent of the seedlings showed typical nema lesions.

The lesions caused by the nemas on the base of the hypocotyl first appear as slightly discolored longitudinal streaks which later become darker and sunken as the nemas destroy the cortex. The epidermis at first remains intact, except where punctured by the nemas. When the seedling is severely injured at the crown, or on the tap root adjacent to the crown, the base of the hypocotyl enlarges abnormally assuming an appearance which is well described by the commonly used term "big shank".

Seedlings showing typical nema lesions were examined by Dr. G. Steiner. One hundred per cent of these seedlings contained Aphelenchus parietinus Bastian. A. avenae Bastian was found in a smaller percentage of the seedlings (33 per cent). Several other forms were found in a few instances (Xiphinema americana Cobb, Tylenchus robustus de Man, Cephalobus elongatus de Man).

These observations indicate to the writers that the nema Aphelenchus parietinus may be largely responsible for the difficulty of securing a stand of cotton when the seed is planted early and for the frequent killing of young cotton seedlings during the cool rainy periods which sometimes occur during the early portion of the cotton growing season.

Aphelenchus parietinus is a well known plant parasitic form, mostly of ectoparasitic habits. Its geographic distribution is a very wide one. As a plant parasite it was first described on strawberry in 1891 under the name of Aphelenchus ormerodis Ritzema Bos.

DISEASES OF SPECIAL CROPS

SURVEY OF TOBACCO SEED BEDS IN NEW YORK

By

H. E. Thomas, J. A. B. Nolla, and H. W. Rankin

Seed beds of the two principal tobacco growing areas of New York in Chemung and Onondaga Counties were inspected on June 12 and June 16.

Chemung County

Seedlings in this area are as usual grown under glass and are in general of better appearance than in the average year. Probably double the optimum quantity of seed per unit of bed was used in nearly all cases. This with the protection afforded by the cover doubtless accounts in large part for the presence of a considerable amount of damping-off and "bed rot." Setting in the field is perhaps one-half to three-fourths completed.

Beds measuring some 35,000 square feet were examined on 26 farms. Only two growers were found who had treated the seed but apparently the seed used by some of the others was treated by the dealers. Four men had used bordeaux mixture but most or all of them too late to be of any great benefit. Steaming of the soil is reported by all growers. The steaming is done by specialists at a cost of 15 cents per sash (18 square feet). There is a tendency to reduce the time of steaming to 15 minutes but no definitely unfavorable results are apparent.

The practice of planting beds adjacent to tobacco barns persists in some farms.

The damping-off seems to be of the Pythium type in most or all cases. Few farms are entirely free from it. Mosaic was seen on two plants in a single bed. Wildfire (Bacterium tabacum) was found in five farms varying from a single small area in a bed to a moderate infection over an entire bed. Flea beetles are generally present and seemed to be promoting the spread of wildfire in two or three farms.

Onondaga County

Seedlings in this area are grown under cloth usually supported by a board frame but frequently without support other than that provided by the plants themselves. This results in sturdier plants, if any, than those grown under glass. The plants over the district and sometimes in a single bed are very uneven in size varying from transplanting size to many plants which have scarcely reached the "dime" stage. The rate of seeding seems to be excessive in most cases. Steaming of the soil is usual but not invariable. Probably not over 20 per cent of the plants are set in the field (June 16) and setting is expected to

continue until July 1, or possibly even later. Approximately 14,000 square feet of beds were inspected on 19 farms.

Damping-off, the only disease recognized in this district by the writers, is common but apparently not responsible for any considerable loss in most beds. The dwarfed condition of many plants is apparently related to exposure to low temperatures and rainfall and in some cases to nitrogen deficiency.

TOBACCO SEEDBED SURVEY IN MARYLAND

By R. A. Jehle

Following is a summary of the results of the tobacco seedbed survey made by Mr. John W. Heuberger and myself in Maryland.

Wildfire (Bacterium tabacum) was found in only forty-one beds or 28 per cent of the total 145 beds inspected. Weather conditions were favorable for the development of wildfire, most of the spring being cool and rainy. The small proportion of beds infected with wildfire was probably due to two causes: First, the spraying or dusting of the seed beds by many tobacco growers regardless of the presence of diseases and, second, the absence of wildfire in the tobacco barns due to the absence of the disease in the fields last year on account of the drouth. The latter factor is probably the most important since tobacco is stripped by the same help which is used to weed the beds, and frequently the laborers go directly from the tobacco barns into the seed beds without changing clothes or disinfecting their hands.

Table 1. Summary of 1931 tobacco seed bed survey in Maryland.

County	No. beds Inspected	No. beds with Wildfire	No. Beds with Downy Mildew	Other Diseases
Anne Arundel	30	20	0	None observed
Calvert	12	3	1	" "
Charles	34	4	3	One with malnutrition diseases.
				One with severe Thielavia root rot.
Prince Georges	37	2	0	
St. Marys	32	12	5	Two with mosaic
				1 with Thielavia root rot.
				One with unidentified disease.
Total	145	41	9	1 malnutrition
				2 root rot
				1 unidentified

Specimens of downy mildew were also received from one bed in Prince Georges County and two in Charles County. On one farm in Charles County, downy mildew was reported to be killing plants in the field.

Downy mildew (Peronospora hyoscyami) was found for the first time in nine tobacco beds in the State, and specimens were received from three others. No serious injury resulted from the presence of the disease in any of the inspected beds but in one instance specimens were sent in and severe injury was reported both in the seed bed and in the field after the plants were set out. In Maryland

climatic conditions are usually favorable for the development of downy mildew. It will probably be necessary for the tobacco grower who wishes to grow tobacco plants free from these diseases to adopt a regular program of spraying or dusting the seed beds. Where healthy plants are set out there is usually very little injury from wildfire in the field and it is hoped that the same will be true of downy mildew.

DISEASES OF VEGETABLES

POTATO LATE BLIGHT (PHYTOPHTHORA INFESTANS)

Maine: A trace was found in the southern part of Aroostook County on July 3 in a field not planted to potatoes for the previous 20 years but planted with seed containing "considerable rot", according to the grower.

Georgia: Two plantings of Red Bliss variety in a one-acre field at Uptonville. Late planting practically all killed and almost total loss; earlier rather badly infected and about 60 per cent loss. In four acres (irrigated) of Red Bliss on the Coastal Plains Experiment Station, Butlers Island, practically all plants affected, all leaves dead and a few potatoes rotted in the ground. Most of the potatoes were the size of marbles when growth stopped. The loss was 50 per cent. 50 per cent loss also in two acres of Cobbler, St. Simons Island. The vines died early and most of the potatoes dug graded No. 2 or poorer. Much less loss, about 20 per cent, in one-acre planting of Green Mountain on same farm as last. Weather dry at all these places. (J. H. Miller, June 20-22).

POTATO TUBERS WITHOUT VINES IN PENNSYLVANIA

"I had an instance of the production of potato tubers without vines called to my attention at Farmersville, Lancaster County. There was a serious amount of it throughout a field of several acres." (W. S. Beach, June 29.)

TOMATO DISEASES IN UTAH

Reported by H. L. Blood, June 18.

Bacterial canker (Aplanobacter michiganense) made its appearance in the truck garden tomato crop of the state as early as May 15 this year and has continued to develop rapidly. Many farmers within the boundaries of a fertile truck garden section in the vicinity of Bountiful, Davis County, Utah, have been forced to discontinue growing tomatoes because of the disease and consequently fail to realize on one of the region's best cash crops.

The disease was found, also, in a number of fields of canning tomatoes in the Weber and Davis County sections during a survey of the tomato fields June 11 to 17. Four per cent of the plants in one field were infected with the disease.

Curly-top or western yellow blight (virus) of tomatoes has made its appearance earlier than usual in the tomato crop of the state this year. A survey of the tomato crop conducted from June 11 to 17 showed the disease to be prevalent throughout the state. The early market tomato crop of southern Utah is a complete failure. A few home garden plots had been replanted and the plants at the time of the survey were doing very well.

The disease was reported by growers in Weber County as prevalent in their fields of canning tomatoes as early as June 9. On June 12 ninty-five per cent of the fields examined in Weber County were found to contain the disease. Ten per cent of the plants in some fields were found to be infected.

The outlook for the 1931 canning tomato crop, at least for a large portion of the tomato growing area of the state is rather discouraging. As a result of the early initial development of curly top, which, under Utah conditions usually continues to develop throughout the growing season, together with the prevalence of the beet leaf-hopper Eutettix tenellus Baker and the prospects of a hot, dry summer, the prospects of a profitable crop are not good.

BACTERIAL CANKER OF TOMATO IN ARKANSAS

Dr. V. H. Young sent tomato plants of the variety Marglobe from the Horticultural plots of the University Farm, Fayetteville, Arkansas, June 22. The specimens were examined by Miss Mary K. Bryan who confirmed Doctor Young's diagnosis of bacterial canker caused by Aplanobacter michiganense. This is the first report of the disease from Arkansas.

FERTILIZER INJURY TO SWEET POTATOES

Plants with leaves showing scorched intercostal areas and margins were seen in fields in many eastern and some Piedmont and western counties of North Carolina this summer. In one field where high grade fertilizer was used at the rate of 1500 pounds per acre in the row just previous to transplanting the loss amounted to 50 per cent. In many areas when the injury occurred, the only effect seemed to be slight stunting, since the more recent growth was free from the injury. Drought periods during and following transplanting, when the salts concentrated at the surface of the soil produced conditions favorable for the injury. (R.F.Poole)

PEA FIELD SURVEY IN NEW YORK

Reported by Charles Chupp

In company with Dr. W. H. Burkholder and Dr. J. G. Horsfall I made a survey of pea fields in the vicinity of Norwich and Sherburne, Chenango County, New York, on July 2. In this section peas are grown for city markets and the pods are

picked by hand. The Telephone pea is the most commonly grown variety while Thomas Laxtons and several other minor varieties are grown as earlier peas.

There was almost no disease present in any of the fields. In a few cases Ascochyta and Mycosphaerella were present on the leaves and slightly on the pods. No appreciable damage was done. In most of the fields there was a trace of bacterial leaf spot, probably Bacterium pisi. This also caused no reduction in yield. The interesting point was that in nearly all pea fields where cabbage had been grown the year before there was a considerable injury to the roots from Rhizoctonia. Peas which followed some other crop did not seem to have this trouble. In a survey of some of the other counties made a few weeks ago a similar condition occurred where peas followed potatoes. Rhizoctonia was present there but was not noticeable where peas followed other crops. Consequently it seems that the Rhizoctonia on both cabbage and potatoes may cause injury to peas provided the weather conditions are favorable for the growth of the organism. A trace of downy mildew, Peronospora viciae was observed in two fields. Aphanomyces root rot was almost wholly absent and there was no sign of the Fusarium wilt.

PEA DISEASES IN GALLATIN COUNTY, MONTANA

Root rot (Aphanomyces euteiches). In 30 acres of Early Dwarf variety about 80 per cent loss, most of the plants affected. Some nematodes present. In 20 acres of Laxton variety most of the plants attacked, probably 50 per cent loss. Mild infestations in some other fields.

Wilt (probably Fusarium orthoceras pisi) in Perfection variety. One to 10 per cent of plants killed in a ten-acre field; 0.1 to 1 per cent killed in a 20-acre planting. Traces in some other fields. This disease was found in this part of Gallatin County by Dr. M. B. Linford in 1929. (P. A. Young, June 23-24).

FRUIT DISEASES

DISEASES OF APPLE

SCAB (Venturia inaequalis)

Maine: The disease is reported as worse than usual, by several county agents in the apple-growing region. In experimental plots the first infection apparently occurred during the blossoming period. (Donald Folsom, July 6).

Minnesota: Scab is absent or very light. One specimen from near Duluth showed very heavy infection, but this is practically the only report of the disease received. (Sect. Pl. Path., June 28).

BLIGHT (Bacillus amylovorus)

Maine: Several dozen affected twigs received from southwestern part of the State where several orchards are said to be affected, one severely. This is the only report of severe injury, on record for period 1907-1931. (Donald Folsom, June 26.)

Minnesota: Reports of fire blight are few and scattering. Most cases occur on the Transcendent crab or upon pears. Most orchards are quite free of the disease. (Sect. Pl. Path., June 28).

RUST (Gymnosporangium juniperi-virginianae)

Minnesota: Galls on cedars were unusually numerous in Southern Minnesota this spring. During the rains of early June the spore horns were well developed. Heavy rust infections on apples are reported from Blue Earth and Chisago counties. Some orchards in Hennepin County have heavily developed infections while others show only flecks on the leaves. (Sect. Pl. Path., June 29).

RHIZOCTONIA CROCORUM ON DEWBERRIES IN NORTH CAROLINA

During 1929 plants of Lucretia dewberry died on low areas in a field of twenty acres near Hamlet. The disease has since appeared in other parts of the field, and the plants are either stunted beyond profitable production or killed. The cane growth in the late summer and autumn season rarely is greater than two feet on diseased as compared with four to twelve feet on healthy plants in the same field. This year another field in the vicinity of Cameron has a scattering of dead plants and many weakened plants. The planting here is only three years old, but the grower reports that dewberries were grown on the area fifteen years ago and at that time the plants died in a similar manner. It would seem that the disease has been prevalent for some time. All large fields from McBee, South Carolina, to Sanford, North Carolina, were examined, but the disease was not found in any except the two reported above. (R. F. Poole)

DISEASES OF CEREALS

STINKING SMUT OF WHEAT IN PENNSYLVANIA

The accompanying table (table 2) shows the amount of stinking smut found in the 68 wheat fields that I have surveyed so far this spring. From these results, I feel certain that the disease will be about as severe this year as it was last. (R. S. Kirby, June 29)

Table 2. Amount of stinking smut (Tilletia) in Pennsylvania wheat fields.

County	Date	Percentage of Stinking Smut in Individual Fields	No. Fields	Average Per Cent Stinking Smut	
Blair	June 18	56. 1. 0 0	8	7.3	
Bedford	June 19	.2 0	2	1	
York	June 24	17. 13.3 8 4.3 3.6 1. .5 .2 0 0	10	4.8	
Cumberland	June 22	5. 1.5 .1 .1 T T T T 0 0	10	.6	
Perry	June 22	25. .6 .4 .2 T T T T	8	3.3	
Juniata	June 22	T 0 0 0 0 0	6	T	
Chester	June 25	9. .1 .1 0	4	2.3	
Delaware	June 26	1. 0	2	.5	
Adams	June 24	.5 T	2	.3	
Center	June 22	0 0	2	0	
Mifflin	June 22	0	1	0	
Lancaster					
1. Untreated with $CuCo_3$	June 25	34. 26.5 11. T	4	17.8	
2. Treat $CuCo_3$ in 1929	June 25	.1 0 0 0	5	.02	County 5.5
3. Treat $CuCo_3$ 1930	June 25	0 0 0 0	4	0.0	

DISEASES OF TREES

TREE DISEASES IN NEW YORK AND NEW ENGLAND

Reported by Walter H. Snell

MAPLE: A great deal of Verticillium wilt of street maples in Providence, Rhode Island, this spring, apparently following the drought of last summer, this winter, and early spring. In one maple it occurred on three large branches which were directly above three lines of wounds made by the spurs used by linemen in climbing trees. I have specimens from several trees in and around Providence.

Pholiota adiposa on street maples in Providence.

SYCAMORE: Blight (Gnomonia veneta) severe this spring, around Providence, throughout Rhode Island and contiguous Massachusetts. Many trees had only one or two hundred leaves long after they were completely leafed out. Spur blight very common. Sycamores near Fitchburg and Leominster, western Massachusetts, or in New York affected hardly at all. European plane not affected anywhere that I noticed.

OAK: The same fungus (Gloeosporium nervisequum stage) severe on Quercus rubra in places in Rhode Island; also in patches near Lake George, New York.

ASH: Leaf blight of white ash, Fraxinus americana, caused by Gloeosporium aridum (?) abundant in places near Lake George.

Polyporus sulphureus on a large white ash and also on a nearby chestnut telephone pole in Providence.

PINES: Interesting occurrence of Cronartium quercus on Pinus banksiana in Flat Rock country, township of Schuyler Falls, Clinton County, New York. Here, on bare outcropping of Laurentian rock formation at an elevation of 1100 feet, P. banksiana, P. rigida, P. strobus, and P. resinosa are growing together. This is one of the few places in the East, I understand, where jack and pitch pines grow together. Pitch pine not affected with the rust here, as far as I noticed. Within 100 feet, uredinia (very few) and telia were found on Quercus rubra at the same time.

ELDERBERRY: Severe outbreak of Puccinia sambuci on stems and blossoms near Schuylerville, New York. I have never noted this before.

RUST ON ASH TREES

Puccinia fraxinata appears to be severe on Fraxinus in the eastern states this year. Specimens have been received from Massachusetts, Pennsylvania and New Jersey, showing heavy infection not only on the leaves, but on the petioles and twigs. Twig infection was particularly conspicuous and striking. (J.A.Stevenson)